Certificate HK07/01191.00

The management system of

ELITEGROUP COMPUTER SYSTEMS CO., LTD. ECS MANUFACTURING (SHENZHEN) CO., LTD.

2F, No.240, Sec.1, Nei Hu Road, Taipei, Taiwan 114, R.O.C
No.20 & No.26 (Except 1F, 2F&3F) Free Trade Zone, Shatoujiao, Shenzhen City, Guangdong Province, China

has been assessed and certified as meeting the requirements of

ISO 9001:2000

For the following activities

Design and Sales of Mainboards, Personal Computers, Notebooks, and Peripheral Cards;
Design and Manufacturing of Mainboards and Peripheral Cards.

Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2000 requirements may be obtained by consulting the organization

This certificate is valid from 16 March 2007 until 15 March 2010
Issue 1. Certified with SGS since March 2007

Multiple certificates have been issued for this scope
The main certificate is numbered HK07/01191.00

Authorised by

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Certificate No.

PRC-HSPM-1172

Issued: July 10, 2007
Revision: N/A
Expiration: July 09, 2010

IECQ Certificate of Hazardous Substance Process Management (HSPM)

applicable to the European Directive 2002/95/EC ("RoHS") requirements.

The Supervising Inspectorate (SGS-CSTC Standards Technical Services Co., Ltd.), sponsored by the United States National Authorized Institution, ECCB certify that

ECS Manufacturing (Shenzhen) Co., Ltd.
No. 20 & 26 (except 1F, 2F & 3F),
Free Trade Zone, Shatoujiao,
Shenzhen, Guangdong Province, P.R. China

Has developed and implemented Hazardous Substances Process Management, procedures, and related processes in compliance with the applicable requirements for HSPM organization approval which is in accordance with the Basic Rules IECQ-01 and Rules of Procedure QC 001002-5 "IECQ Hazardous Substance Process Management" of the IEC Quality Assessment System for Electronic Components (IECQ), and with respect to the Specification QC 080000 IECQ HSPM.

This certification is applicable to all electronic components and related materials and processes for the

Design and manufacture of Mainboards and Peripheral Cards.

Issued by Certification Authorities:

Electronic Component Certification Board

Signed:

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16F Century YuHui Mansion
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The validity of this certificate is maintained through on-going surveillance inspections.

Note: This certificate is valid only in conjunction with the approval document(s). This approval and this certificate may be suspended or withdrawn in accordance with the Rules of Procedure of the IECQ. This certificate remains the property of the body which granted it.

Preface

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Version 1.0

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Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation

Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilieur du Canada.

About the Manual

The manual consists of the following:

Chapter 1

Introducing the Motherboard

Describes features of the motherboard.

Go to ⇨ page 1

Chapter 2

Installing the Motherboard

Describes installation of motherboard components.

Go to ⇨ page 7

Chapter 3

Using BIOS

Provides information on using the BIOS Setup Utility.

Go to ⇨ page 25

Chapter 4

Using the Motherboard Software

Describes the motherboard software

Go to ⇨ page 43

Chapter 5

ATI CrossFireX™ Technology & Hybrid Graphics® Technology Support

Describes the ATI CrossFireX™ Technology & Hybrid Graphics® Technology

Go to ⇨ page 53

Chapter 6

Setting Up AMD SB750 RAID Configuration

Provides information about SATA RAID Setup

Go to ⇨ page 59

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Chapter 1
Introducing the Motherboard

Introduction

Thank you for choosing the A790GXM-AD3 motherboard. This motherboard is a high performance, enhanced function motherboard that supports socket for AMD Phenom™ II processor (socket AM3) for high-end business or personal desktop markets.

The motherboard incorporates the AMD 790GX Northbridge (NB) and SB750 Southbridge (SB) chipsets. The Northbridge supports the HyperTransport™ 3.0 interface. The memory controller supports DDR3 memory DIMM frequencies of 1333/1066/800. It supports four DDR3 slots with maximum memory size of 32 GB*. Two PCI Express x16 slots, intended for Graphics Interface, are fully compliant to the PCI Express Gen2 (version 2.0).

The SB750 Southbridge supports two PCI slots which are PCI v2.3 compliant. In addition, two PCI Express x1 slots are supported, fully compliant to the PCI Express Gen2 (version 2.0). It integrates USB 2.0 interface, supporting up to twelve functional ports (six USB ports and three USB 2.0 headers support additional six USB ports). One onboard IDE connector supports two IDE devices in Ultra ATA 133/100/66/33 modes. The Southbridge integrates a Serial ATA host controller, supporting six SATA ports with maximum transfer rate up to 3.0 Gb/s each. It provides AMD SATA RAID configuration with RAID 0, 1, 5, and 10 modes supported.

There is an advanced full set of I/O ports in the rear panel, including PS/2 mouse and keyboard connectors, one CLR_CMOS button, one eSATA port, one VGA port, one HDMI port, one optical SPDIFO port, six USB ports, one LAN port and audio jacks for microphone, line-in and 8-ch line-out.

***** *Currently, the memory maximum size we have tested is 8 GB (2 GB per dimm).*

Feature

Processor

This motherboard uses a socket AM3 that carries the following features:

- Accommodates AMD Phenom™ II processor (socket AM3)
- Supports HyperTransport™ (HT) 3.0 interface speeds

HyperTransport™ Technology is a point-to-point link between two devices, it enables integrated circuits to exchange information at much higher speeds than currently available interconnect technologies.

This board supports CPU up to 140W TDP only.

Chipset

The AMD 790GX Northbridge (NB) and SB750 Southbridge (SB) chipsets are based on an innovative and scalable architecture with proven reliability and performance.

AMD 790GX (NB)

- One x4 A-Link Express II interface (PCI Express 1.1 compliant) for connection to an AMD Southbridge
- Supports two PCI Express x16 for Graphics Interface, fully compliant to the PCI Express Gen 2 (version 2.0)
- Proven Radeon™ graphics powering DirectX® 10
- Enhanced Digital Display integration
- Fully ACPI 2.0, OnNow, and IAPC (Instantly Available PC) power management
- Single chip solution in 55nm, 1.1 V CMOS technology
- Integrated ATI Hybrid Graphics, ATI Avivo™ HD[1], ATI HD[1]™, Low Power Design, AMD Cool'n'Quiet™, ATI SurroundView™, AMD OverDrive and AMD RAIDXpert™

SB750 (SB)

- Compliant with PCI v2.3 specification at 33 MHz
- Supports six Serial ATA devices which speeds up to 3.0 Gb/s
- Complies with SATA 2.5 specification
- Supports both SATA 1.5 and SATA 3.0 compliance devices
- Supports AHCI hardware assist to support advanced features such as NCQ (Native Command Queuing), Hot Plug, and Device or Host initiated power Management (DIIPM/HIPM)
- Integrated USB 2.0 Host Controller supporting up to twelve USB 2.0 ports
- Integrated IDE controller supports Ultra ATA 133/100/66/33 modes
- Provides AMD SATA RAID configuration with RAID 0, 1, 5, and 10 modes supported

Memory

- Supports DDR3 1333/1066/800 DDR3 SDRAM with Dual-channel architecture
- Accommodates four unbuffered DIMMs
- Up to 8 GB per DIMM with maximum memory size up to 32 GB*

Audio

- All DACs support 192K/96K/48K/44.1KHz DAC sample rate
- High-quality analog differential CD input
- Software selectable 2.5V/3.75V VREFOUT
- Meets Microsoft WLP 3.08 audio requirements
- Direct Sound 3D™ compatible

Onboard LAN

- Supports PCI Express™ 1.1
- Integrated 10/100/1000 transceiver
- Wake-on-LAN and remote wake-up support

Expansion Options

The motherboard comes with the following expansion options:

- Two PCI Express x16 slots for Graphics Interface
- Two PCI Express x1 slots
- Two 32-bit PCI v2.3 compliant slots
- One IDE connector supporting up to two IDE devices
- Six 7-pin SATA connectors

This motherboard supports Ultra DMA bus mastering with transfer rates of 133/100/66/33 MB/s.

Integrated I/O

The motherboard has a full set of I/O ports and connectors:

- Two PS/2 ports for mouse and keyboard
- One CLR_CMOS button
- One eSATA port
- One VGA port
- One HDMI port
- One optical SPDIFO port
- Six USB ports
- One LAN port
- Audio jacks for microphone, line-in and 8-ch line-out

BIOS Firmware

The motherboard uses AMI BIOS that enables users to configure many system features including the following:

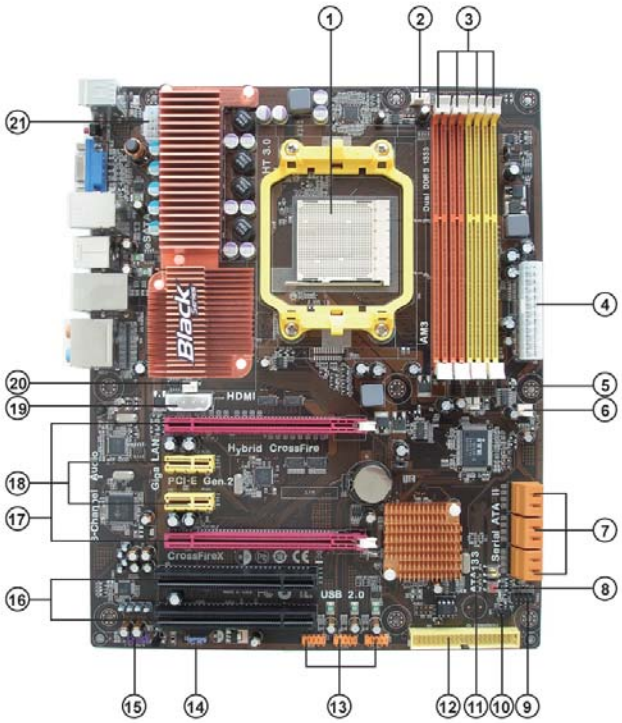
- Power management
- Wake-up alarms
- CPU parameters
- CPU and memory timing

The firmware can also be used to set parameters for different processor clock speeds.

1. Some hardware specifications and software items are subject to change without prior notice.

2. Due to chipset limitation, we recommend that motherboard be operated in the ambiance between 0 and 50°C.

Motherboard Components



The above image is for reference only; please take the actual motherboard for detailed parts.

Table of Motherboard Components

LABEL	COMPONENTS
1. CPU Socket	Socket for AMD Phenom™ II processor (socket AM3)
2. CPU_FAN	CPU cooling fan connector
3. DIMM1~4	240-pin DDR3 SDRAM slots
4. ATX_POWER	Standard 24-pin ATX power connector
5. PWR_FAN	Power cooling fan connector
6. SYS_FAN	System cooling fan connector
7. SATA1~6	Serial ATA connectors
8. PWR_BTN	Power on button
9. PANEL	Front Panel switch/LED header
10. SPK	Internal speaker header
11. RST_BTN	Reset button
12. IDE	Primary IDE connector
13. F_USB1~3	Front Panel USB headers
14. SPDIFO	SPDIF out header
15. F_AUDIO	Front Panel Audio header
16. PCI1~2	32-bit add-on card slots
17. PCIE16X_1~2	PCI Express x16 slots for graphics interface
18. PCIE1~2	PCI Express x1 slots
19. ATX4P	Auxiliary power connector for graphics card
20. NB_FAN	Northbridge cooling fan connector
21. ATX12V	8-pin +12V power connector

This concludes Chapter 1. The next chapter explains how to install the motherboard.

Memo

Chapter 2
Installing the Motherboard

Safety Precautions

- Follow these safety precautions when installing the motherboard
- Wear a grounding strap attached to a grounded device to avoid damage from static electricity
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard
- Leave components in the static-proof bags they came in
- Hold all circuit boards by the edges. Do not bend circuit boards

Choosing a Computer Case

There are many types of computer cases on the market. The motherboard complies with the specifications for the FULL ATX system case. Firstly, some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Make sure that your case supports all the features required. Secondly, this motherboard supports two enhanced IDE drives. Make sure that your case has sufficient power and space for all drives that you intend to install.

Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the motherboard.

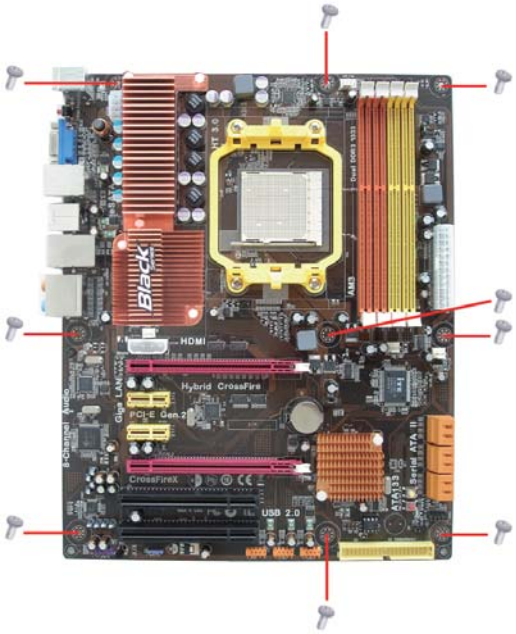
This motherboard carries a FULL ATX form factor of 305 x 244 mm. Choose a case that accommodates this form factor.

Installing the Motherboard in a Case

Refer to the following illustration and instructions for installing the motherboard in a case.

Most system cases have mounting brackets installed in the case, which correspond the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.

Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your motherboard.



Do not over-tighten the screws as this can stress the motherboard.

Installing Hardware

Installing the Processor

Caution: When installing a CPU heatsink and cooling fan, make sure that you DO NOT scratch the motherboard or any of the surface-mount resistors with the clip of the cooling fan. If the clip of the cooling fan scrapes across the motherboard, you may cause serious damage to the motherboard or its components.

On most motherboards, there are small surface-mount resistors near the processor socket, which may be damaged if the cooling fan is carelessly installed.

Avoid using cooling fans with sharp edges on the fan casing and the clips. Also, install the cooling fan in a well-lit work area so that you can clearly see the motherboard and processor socket.

Before installing the Processor

This motherboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change the settings in the system Setup Utility. We strongly recommend that you do not over-clock processors or other components to run faster than their rated speed.

Warning:
1. Over-clocking components can adversely affect the reliability of the system and introduce errors into your system. Over-clocking can permanently damage the motherboard by generating excess heat in components that are run beyond the rated limits.

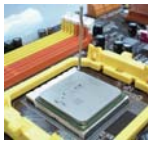
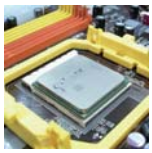
2. Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.

This motherboard has a socket AM3 processor socket. When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.

CPU Installation Procedure

The following illustration shows CPU installation components.

1 Install your CPU. Pull up the lever away from the socket and lift up to 90-degree angle.
2 Locate the CPU cut edge (the corner with the pin hold noticeably missing). Align and insert the CPU correctly.
3 Press the lever down and apply thermal grease on top of the CPU.
4 Put the CPU Fan down on the retention module and snap the four retention legs of the cooling fan into place.
5 Flip the levers over to lock the heat sink in place and connect the CPU cooling Fan power cable to the CPU fan connector. This completes the installation.

To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 4800 rpm at least. CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.

Installing Memory Modules

This motherboard accommodates four memory modules. It can support four 240-pin DDR3 1333/1066/800. The total memory capacity is 32 GB*.

DDR3 SDRAM memory module table

Memory module	Memory Bus
DDR3 800	***400 MHz***
DDR3 1066	***533 MHz***
DDR3 1333	***667 MHz***

You must install at least one module in any of the four slots. Each module can be installed with 8 GB of memory.

The four DDR3 memory sockets (DIMM1, DIMM2, DIMM3, DIMM4) are divided into two channels and each channel has two memory sockets as following:

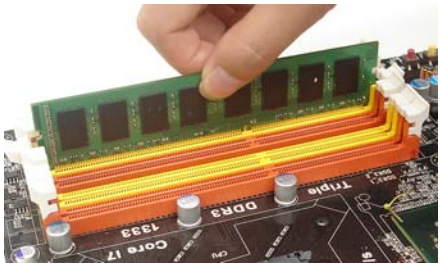
- Channel 0: DIMM1, DIMM2
- Channel 1: DIMM3, DIMM4

Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.

Installation Procedure

Refer to the following to install the memory modules.

1 This motherboard supports unbuffered DDR3 SDRAM only.
2 Push the latches on each side of the DIMM slot down.
3 Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.
4 Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
5 Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
6 Install any remaining DIMM modules.



For best performance and compatibility, we recommend that users install DIMMs in the sequence of DIMM3, DIMM4, DIMM1 and DIMM2.

Recommend configuration for best performance and compatibility

Number of DIMMs	DIMM 1	DIMM 2	DIMM 3	DIMM 4	AM3
1					Single Channel
2					Dual Channel
3					Single Channel
4					Dual Channel

: operation with *normal performance*

: operation with *the best performance*

Table A: DDR3 (memory module) QVL (Qualified Vendor List)

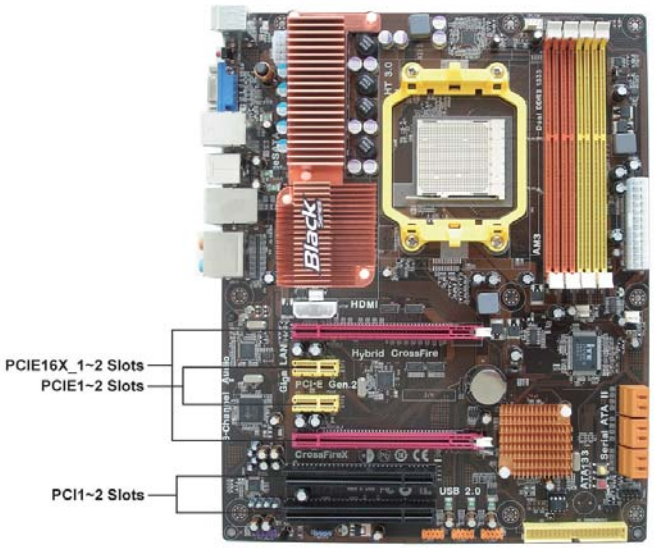
The following DDR3 1333/1066/800 memory modules have been tested and qualified for use with this motherboard.

Type	Size	Vendor	Module Name
DDR 3 800	1 GB	HYNIX	HYMT112U64NF8-S65 AA
	2 GB	HYNIX	HYMT125U64ZNF8-S6 AA
DDR 3 1066	512 MB	ELPIDA	PC3-8500U-7-00-AP
		Hynix	HYMT164U64ZNF8-G8 AA
		Micron	MT4JTF6464AY-1G1B1
	1GB	A-data	M3OSS3H3I3120B5Z/A-data/Boxed
		Aeneon	AEH760UD00-10FA98X
		Corsair	CM3X1024-1066C7
		Hynix	HYMT112U64ZNF8-G8 AA
		Kingston	KVR1066D3N7
		Micron	MT8JTF12864AY-1G1D1
		Qimonda	IMSH1GU03A1F1C-10G B2S81427034
			IMSH1GU03A1F1C-10F B2S81427023
		Samsung	Gold Bar M378B2873DZ1-CF8 0818
		Winchip	64A0TPHN8G17E
	2 GB	Elixir	M2F2G64CB8HA4N-BE 0831.TW
		Hynix	HYMT125U64ZNF8-G8 AA
		Micron	MT16JTF25664AY-1G1D1
		Qimonda	IMSH2GU13A1F1C-10F B3S81427044
			IMSH2GU13A1F1C-10G B3S81528005
	4GB	Samsung	M378B5273BH1-CF8 0840
DDR 3 1333	1 GB	Aeneon	AXH760UD00-13GA98X
		Corsair	CM3X1024-1333C9DHX/Corsair/Boxed
		Kingston	KVR1333D3N9
		Qimonda	IMSH1GU13A1F1C-13H
	2 GB	A-DATA	M3OSS6H3J4130E1C5Z
		Aeneon	AEH860UD00-13H
		Hexon=NCP	ELPH8AUDR-13M88
		Kingston	KVR1333D3N9K2
		Qimonda	IMSH2GU13A1F1C-13H B3S81124001

Expansion Slots

Installing Add-on Cards

The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.



PCIE16X_1~2 Slots The PCI Express x16 slots are used to install two external PCI Express graphics cards that are fully compliant to the PCI Express Gen2 (version 2.0). For CrossFireX™ information please refer to Chapter 5.

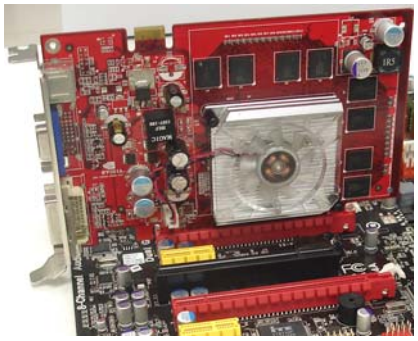
PCIE1~2 Slots The PCI Express x1 slots are fully compliant to the PCI Express Gen2 (version 2.0) as well.

PCI1~2 Slots This motherboard is equipped with two standard PCI slots. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which for the most part, is a supplement of the older ISA bus standard. The PCI slots on this board are PCI v2.3 compliant.

Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

Follow these instructions to install an add-on card:

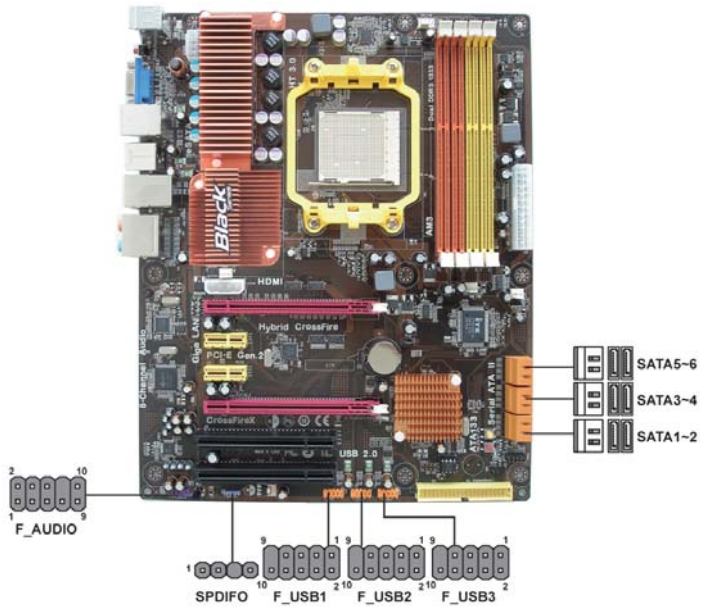
1 Remove a blanking plate from the system case corresponding to the slot you are going to use.
2 Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.
3 Secure the metal bracket of the card to the system case with a screw.



For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:



SATA1~6: Serial ATA connectors

These connectors are used to support the new Serial ATA devices for the highest data transfer rates (3.0 Gb/s), simpler disk drive cabling and easier PC assembly. It eliminates limitations of the current Parallel ATA interface. But maintains register compatibility and software compatibility with Parallel ATA.

Pin	Signal Name	Pin	Signal Name
1	Ground	2	TX+
3	TX-	4	Ground
5	RX-	6	RX+
7	Ground	-	-

F_USB1~3: Front Panel USB headers

The motherboard has six USB ports installed on the rear edge I/O port array. Additionally, some computer cases have USB ports at the front of the case. If you have this kind of case, use auxiliary USB connector to connect the front-mounted ports to the motherboard.

Pin	Signal Name	Function
1	USBPWR	Front Panel USB Power
2	USBPWR	Front Panel USB Power
3	USB_FP_P0-	USB Port 0 Negative Signal
4	USB_FP_P1-	USB Port 1 Negative Signal
5	USB_FP_P0+	USB Port 0 Positive Signal
6	USB_FP_P1+	USB Port 1 Positive Signal
7	GND	Ground
8	GND	Ground
9	Key	No pin
10	USB_FP_OC0	Overcurrent signal

Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.

SPDIFO: SPDIF out header

This is an optional header that provides an S/PDIF (Sony/Philips Digital Interface) output to digital multimedia device through optical fiber or coaxial connector.

Pin	Signal Name	Function
1	SPDIF	SPDIF digital output
2	+5VA	5V analog Power
3	Key	No pin
4	GND	Ground

F_AUDIO: Front Panel Audio header for Azalia

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.

Pin	Signal Name	Pin	Signal Name
1	PORT 1L	2	AUD_GND
3	PORT 1R	4	PRESENCE#
5	PORT 2R	6	SENSE1_RETURN
7	SENSE_SEND	8	KEY
9	PORT 2L	10	SENSE2_RETURN

Installing a Hard Disk Drive/CD-ROM/SATA Hard Drive

This section describes how to install IDE devices such as a hard disk drive and a CD-ROM drive.

About IDE Devices

Your motherboard has one IDE interface. An IDE ribbon cable supporting two IDE devices is bundled with the motherboard.

You must orient the cable connector so that the pin1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.

IDE: IDE Connector

This motherboard supports six high data transfer SATA ports with each runs up to 3.0 Gb/s. To get better system performance, we recommend users connect the CD-ROM to the IDE channel, and set up the hard drives on the SATA ports.

IDE devices enclose jumpers or switches used to set the IDE device as MASTER or SLAVE. Refer to the IDE device user's manual. Installing two IDE devices on one cable, ensure that one device is set to MASTER and the other device is set to SLAVE. The documentation of your IDE device explains how to do this.

About SATA Connectors

Your motherboard features six SATA connectors supporting a total of six drives. SATA refers to Serial ATA (Advanced Technology Attachment) is the standard interface for the IDE hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard and follow the illustration below to install the SATA hard drives.

Installing Serial ATA Hard Drives

To install the Serial ATA (SATA) hard drives, use the SATA cable that supports the Serial ATA protocol. This SATA cable comes with a SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.

SATA cable (optional)

SATA power cable (optional)

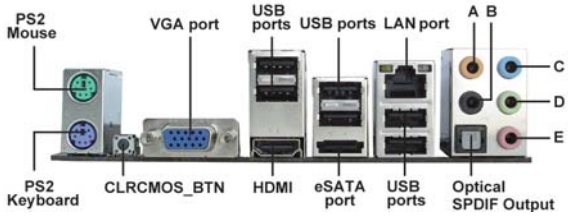
Refer to the illustration below for proper installation:

1 Attach either cable end to the connector on the motherboard.
2 Attach the other cable end to the SATA hard drive.
3 Attach the SATA power cable to the SATA hard drive and connect the other end to the power supply.

This motherboard supports the "Hot-Plug" function.

Connecting I/O Devices

The backplane of the motherboard has the following I/O ports:



PS2 Mouse Use the upper PS/2 port to connect a PS/2 pointing device.

PS2 Keyboard Use the lower PS/2 port to connect a PS/2 keyboard.

CLRCOMS_BTN Use the CLR_CMOS button to clear CMOS.

VGA Port Connect your monitor to the VGA port.

USB Ports Use the USB ports to connect USB devices.

HDMI Port Connect the HDMI port to the HDMI devices.

LAN Port Connect an RJ-45 jack to the LAN port to connect your computer to the network.

eSATA Port Use this port to connect an external SATA box or a Serial ATA port multiplier.

Before connecting the eSATA cables, make sure to turn off the power of the external enclosure.

Optical SPDIF Output This jack connects to external optical digital audio output devices.

Audio Ports Use the audio jacks to connect audio devices. The C port is for stereo line-in signal, while the E port is for microphone in signal. This motherboard supports audio devices that correspond to the A, B and D port respectively. In addition, all of the 3 ports, B, and D provide users with both right & left channels individually. Users please refer to the following note for specific port function definition.

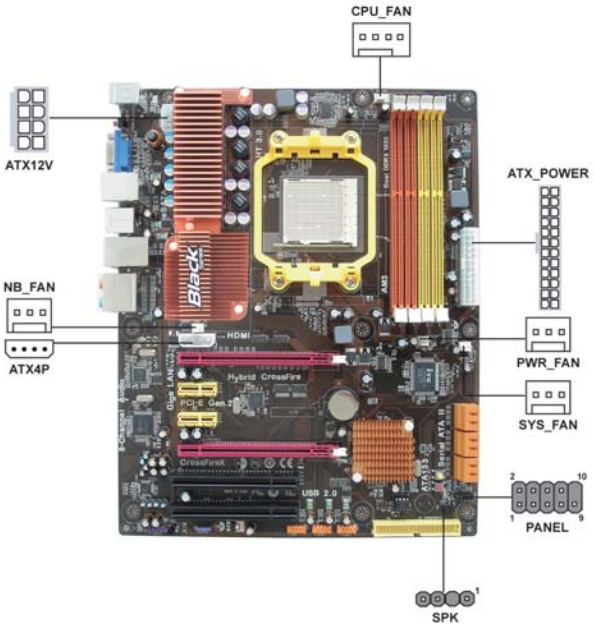
A: Center & Woofer	D: Front Out
B: Back Surround	E: Mic_in Rear
C: Line-in	-

The above port definition can be changed to audio input or audio output by changing the driver utility setting.

Connecting Case Components

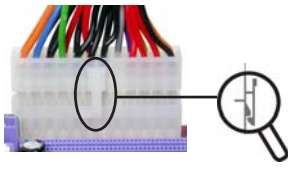
After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

1. Connect the CPU cooling fan cable to **CPU_FAN**.
2. Connect the standard power supply connector to **ATX_POWER**.
3. Connect the power cooling fan connector to **PWR_FAN.**
4. Connect the system cooling fan connector to **SYS_FAN**.
5. Connect the case switches and indicator LEDs to the **PANEL**.
6. Connect the case speaker cable to **SPK**.
7. Connect the connector for graphics interface to **ATX4P**.
8. Connect the Northbridge cooling fan connector to **NB_FAN**.
9. Connect the auxiliary case power supply connector to **ATX12V**.



Connecting 24-pin power cable

The ATX 24-pin connector allows you to connect to ATX v2.x power supply.

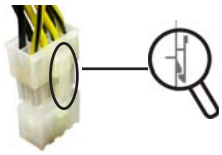


24-pin power cable

With ATX v2.x power supply, users please note that when installing 24-pin power cable, the latches of power cable and the ATX_POWER match perfectly.

Connecting 8-pin power cable

The ATX12V power connector is used to provide power to the CPU.



When installing 8-pin power cable, the latches of power cable and the ATX12V match perfectly.

8-pin power cable

CPU_FAN: Cooling FAN Power Connector

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor
4	PWM	CPU FAN control

Users please note that the fan connector supports the CPU cooling fan of 1.1A~2.2A (26.4W max.) at +12V.

ATX_POWER: ATX 24-pin Power Connector

Pin	Signal Name	Pin	Signal Name
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	Ground	15	COM
4	+5V	16	PS_ON
5	Ground	17	COM
6	+5V	18	COM
7	Ground	19	COM
8	PWRGD	20	-5V
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	COM

PWR_FAN/SYS_FAN/NB_FAN: FAN Power Connectors

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor

SPK: Internal speaker

Pin	Signal Name
1	VCC
2	Key
3	NC
4	Signal

ATX4P: Auxiliary Power Connector for Graphics Interface

Pin	Signal Name
1	NC
2	GND
3	GND
4	+12V

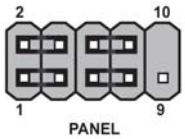
Make sure to connect a 4-pin ATX power cable to ATX4P; otherwise, the system will be unstable.

ATX12V: ATX 12V Power Connector

Pin	Signal Name	Pin	Signal Name
1	Ground	5	+12V
2	Ground	6	+12V
3	Ground	7	+12V
4	Ground	8	+12V

Front Panel Header

The front panel header (PANEL) provides a standard set of switch and LED headers commonly found on FULL ATX, ATX or Micro ATX cases. Refer to the table below for information:



Pin	Signal	Function	Pin	Signal	Function
1	HD_LED_P	Hard disk LED (+)	2	FP PWR/SLP	*MSG LED (+)
3	HD_LED_N	Hard disk LED (-)	4	FP PWR/SLP	*MSG LED (-)
5	RST_SW_N	Reset Switch (-)	6	PWR_SW_P	Power Switch (+)
7	RST_SW_P	Reset Switch (+)	8	PWR_SW_N	Power Switch (-)
9	RSVD	Reserved	10	Key	No pin

** MSG LED (dual color or single color)*

Hard Drive Activity LED

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

Power/Sleep/Message waiting LED

Connecting pins 2 and 4 to a single or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

Reset Switch

Supporting the reset function requires connecting pins 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

Power Switch

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal de-bounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

This concludes Chapter 2. The next chapter covers the BIOS.

Memo

Chapter 3

Using BIOS

About the Setup Utility

The computer uses the latest "American Megatrends Inc. " BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

The Standard Configuration

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.

This Setup Utility should be used:

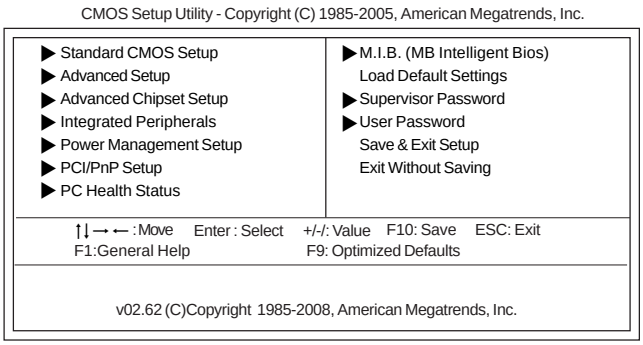
- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

Entering the Setup Utility

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

Press DEL to enter SETUP

Press the delete key to access the BIOS Setup Utility.


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
▶ Standard CMOS Setup
▶ Advanced Setup
▶ Advanced Chipset Setup
▶ Integrated Peripherals
▶ Power Management Setup
▶ PCI/PnP Setup
▶ PC Health Status
▶ M.I.B. (MB Intelligent Bios)
Load Default Settings
▶ Supervisor Password
▶ User Password
Save & Exit Setup
Exit Without Saving
↑↓→←:Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults
v02.62 (C)Copyright 1985-2008, American Megatrends, Inc.

Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ▶) lead to sub menus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the sub menu.

In this manual, default values are enclosed in parenthesis. Sub menu items are denoted by a triangle ▶.

The default BIOS setting for this motherboard applies for most conditions with optimum performance. It is not suggested to change the default values in the BIOS setup and the manufacture takes no responsibility to any damage caused by changing the BIOS settings.

BIOS Navigation Keys

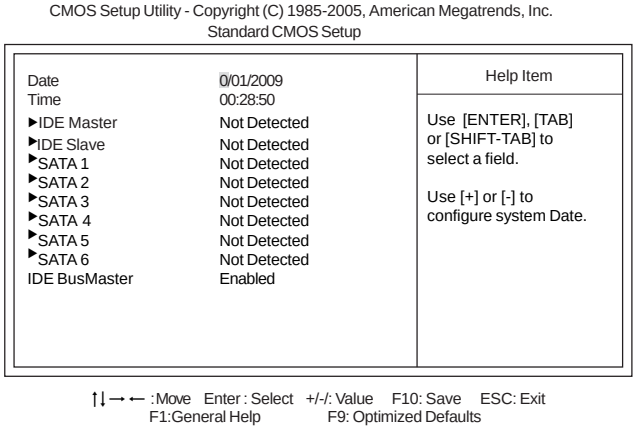
The BIOS navigation keys are listed below:

KEY	FUNCTION
ESC	Exits the current menu
↑↓→←	Scrolls through the items on a menu
+/-/PU/PD	Modifies the selected field's values
Enter	Select
F9	Loads an optimized setting for better performance
F10	Saves the current configuration and exits setup
F1	Displays a screen that describes all key functions

For the purpose of better product maintenance, the manufacture reserves the right to change the BIOS items presented in this manual. The BIOS setup screens shown in this chapter are for reference only and may differ from the actual BIOS. Please visit the manufacture's website for updated manual.

Standard CMOS Setup

This option displays basic information about your system.

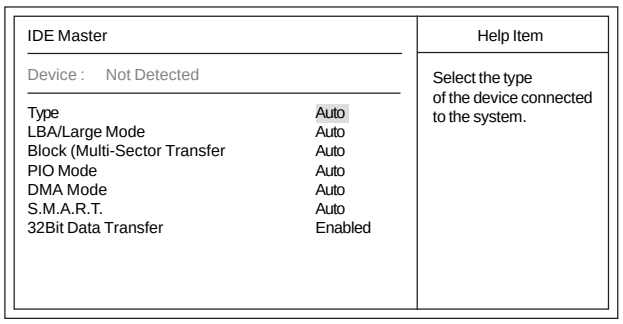

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Standard CMOS Setup
Date 0/01/2009
Time 00:28:50
▶IDE Master Not Detected
▶IDE Slave Not Detected
▶SATA 1 Not Detected
▶SATA 2 Not Detected
▶SATA 3 Not Detected
▶SATA 4 Not Detected
▶SATA 5 Not Detected
▶SATA 6 Not Detected
IDE BusMaster Enabled
Help Item
Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.
Use [+] or [-] to configure system Date.
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

Date & Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

▶IDE Master/Slave, SATA1~6

Your computer has one IDE channel which can be installed with one or two devices (Master and Slave). In addition, this motherboard supports six SATA channels and each channel allows one SATA device to be installed. Use these items to configure each device on the IDE channel.


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
IDE Master
IDE Master
Device : Not Detected
Type Auto
LBA/Large Mode Auto
Block (Multi-Sector Transfer Auto
PIO Mode Auto
DMA Mode Auto
S.M.A.R.T. Auto
32Bit Data Transfer Enabled
Help Item
Select the type of the device connected to the system.
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

Type (Auto)

Use this item to configure the type of the IDE device that you specify. If the feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer.

LBA/Large Mode (Auto)

Use this item to set the LBA/Large mode to enhance hard disk performance by optimizing the area the hard disk is visited each time.

Block (Multi-Sector Transfer) (Auto)

If the feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer.

PIO Mode (Auto)

Use this item to set the PIO mode to enhance hard disk performance by optimizing the hard disk timing.

DMA Mode (Auto)

DMA capability allows users to improve the transfer-speed and data-integrity for compatible IDE devices.

S.M.A.R.T. (Auto)

The S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) system is a diagnostics technology that monitors and predicts device performance. S.M.A.R.T. software resides on both the disk drive and the host computer.

32Bit Data Transfer (Enabled)

Use this item to enable or disable 32Bit Data Transfer.

Press <Esc> to return to the Standard CMOS Setup page.

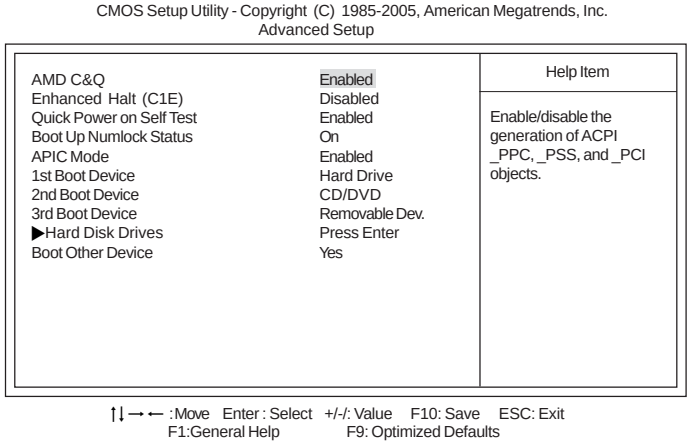
IDE BusMaster (Enabled)

This item enables or disables the DMA under DOS mode. We recommend you to leave this item at the default value.

Press <Esc> to return to the main menu setting page.

Advanced Setup

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.



AMD C&Q (Enabled)

This item helps the system to lower the frequency when CPU idles. When the frequency decreases, the temperature will drop automatically as well.

Enhanced Halt (C1E) (Disabled)

This item enables or disables enhanced halt.

Quick Power on Self Test (Enabled)

Enable this item to shorten the power on testing (POST) and have your system start up faster. You might like to enable this item after you are confident that your system hardware is operating smoothly.

Boot Up Numlock Status (ON)

This item defines if the keyboard Num Lock key is active when your system is started.

APIC Mode (Enabled)

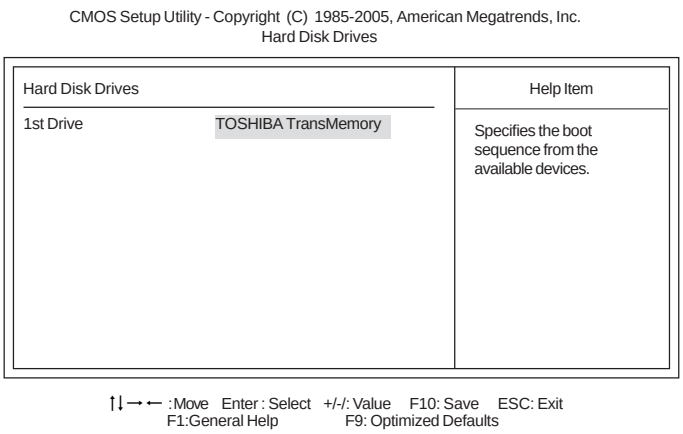
This item allows you to enable or disable the APIC (Advanced Programmable Interrupt Controller) mode. APIC provides symmetric multi-processing (SMP) for systems, allowing support for up to 60 processors.

1st/2nd/3rd Boot Device (Hard Drive/CD/DVD/Removable Dev.)

Use this item to determine the device order the computer used to look for an operating system to load at start-up time. The devices showed here will be different depending on the exact devices installed on your motherboard.

▶Hard Disk Drives (Press Enter)

Scroll to this item and press <Enter> to view the following screen:


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Hard Disk Drives
Hard Disk Drives
Help Item
1st Drive
TOSHIBA TransMemory
Specifies the boot sequence from the available devices.
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

Press <Esc> to return to the Advanced Setup page.

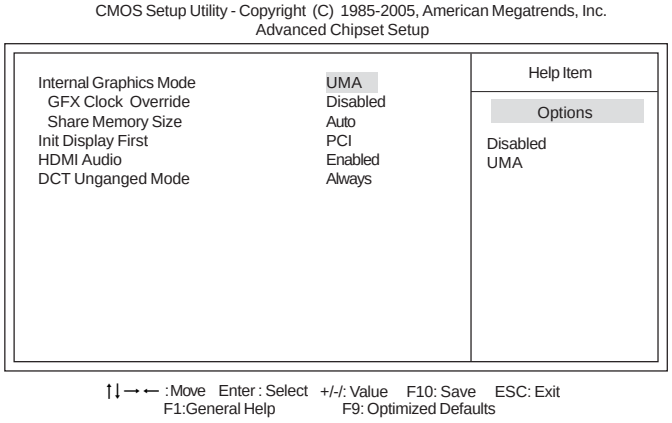
Boot Other Device (Yes)

When enabled, the system searches all other possible locations for an operating system if it fails to find one in the devices specified under the First, Second and Third boot devices.

Press <Esc> to return to the main menu setting page.

Advanced Chipset Setup

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.



Internal Graphics Mode (UMA)

Use this item to choose the onboard VGA mode. You can select [Disabled] to disable the onboard VGA, [UMA] to use the system memory, [SIDEPORT] to use the onboard memory.

Warning: If Disabled Internal Graphics Mode, please Load default to Enable it.

GFX Clock Override (Disabled)

Use this item to enable or disable GFX Clock Override.

Share Memory Size (Auto)

This item lets you allocate a portion of the main memory for the onboard VGA display application.

Init Display First (PCI)

Use this item to select which graphics controller to use as the primary boot devices.

HDMI Audio (Enabled)

This item is used to enable or disable the NB HDMI audio support.

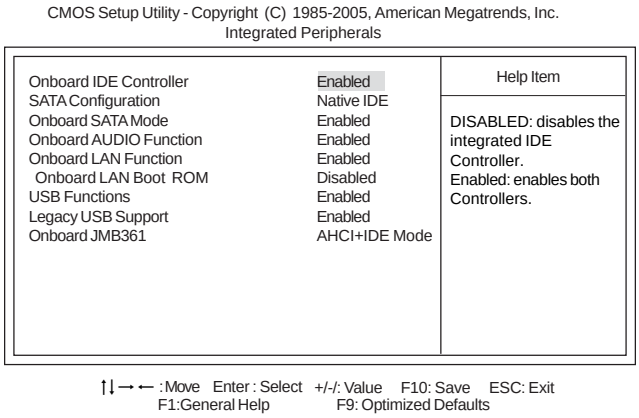
DCT Unganged Mode (Always)

This item is used to select the DCT mode (DRAM Controller mode).

Press <Esc> to return to the main menu setting page.

Integrated Peripherals

This page sets up some parameters for peripheral devices connected to the system.



Onboard IDE Controller (Enabled)

Use this item to enable or disable the onboard IDE interface.

SATA Configuration (Native IDE)

Use this item to show the Serial ATA Configuration options: Disabled, Compatible, Enhanced.

Onboard SATA Mode (Enabled)

Use this item to enable or disable the onboard SATA mode.

Onboard AUDIO Function (Enabled)

Use this item to enable or disable the onboard Audio function.

Onboard LAN Function (Enabled)

Use this item to enable or disable the onboard LAN function.

Onboard LAN Boot ROM (Disabled)

Use this item to enable or disable the booting from the onboard LAN or a network add-in card with a remote boot ROM installed.

USB Functions (Enabled)

Use this item to enable or disable the USB function.

Legacy USB Support (Enabled)

Use this item to enable or disable support for legacy USB devices.

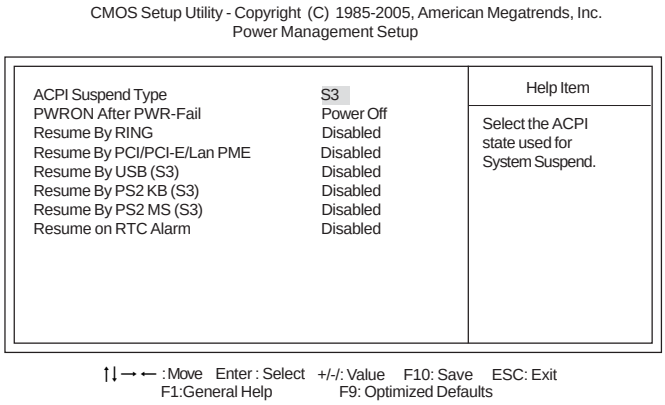
Onboard JMB361 (AHCI+IDE Mode)

Use this item to select Onboard JMB361 mode.

Press <Esc> to return to the main menu setting page.

Power Management Setup

This page sets up some parameters for system power management operation.


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Power Management Setup
ACPI Suspend Type S3
PWRON After PWR-Fail Power Off
Resume By RING Disabled
Resume By PCI/PCI-E/Lan PME Disabled
Resume By USB (S3) Disabled
Resume By PS2 KB (S3) Disabled
Resume By PS2 MS (S3) Disabled
Resume on RTC Alarm Disabled
Help Item
Select the ACPI state used for System Suspend.
↑↓→← : Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

ACPI Suspend Type (S3)

Use this item to define how your system suspends. In the default, S3, the suspend mode is a suspend to RAM, i.e, the system shuts down with the exception of a refresh current to the system memory.

PWRON After PWR-Fail (Power Off)

This item enables your computer to automatically restart or return to its operating status.

Resume By RING (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the Modem. You must use an ATX power supply in order to use this feature.

Resume By PCI/PCI-E/Lan PME (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the PCI Modem or PCI LAN card. You must use an ATX power supply in order to use this feature. Use this item to do wake-up action if inserting the PCI card.

Resume By USB (S3) (Disabled)

This item allows you to enable or disable the USB device wakeup function from S3 mode.

Resume By PS2 KB (S3) (Disabled)

This item enables or disables you to allow keyboard activity to awaken the system from power saving mode.

Resume By PS2 MS (S3) (Disabled)

This item enables or disables you to allow mouse activity to awaken the system from power saving mode.

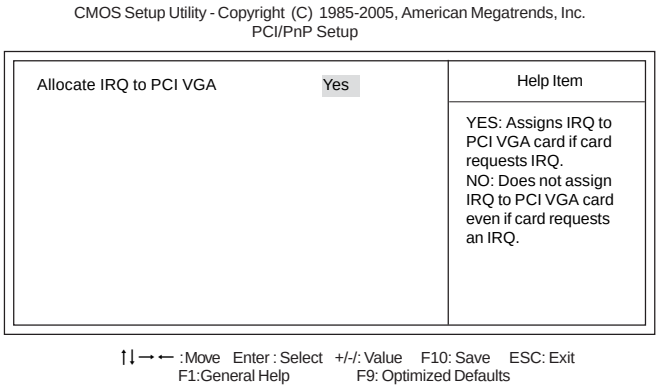
Resume on RTC Alarm (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume at a fixed time based on the system's RTC (realtime clock). Use the items below this one to set the date and time of the wake-up alarm. You must use an ATX power supply in order to use this feature.

Press <Esc> to return to the main menu setting page.

PCI/PnP Setup

This page sets up some parameters for devices installed on the PCI bus and those utilizing the system plug and play capability.


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
PCI/PnP Setup
Allocate IRQ to PCI VGA
Yes
Help Item
YES: Assigns IRQ to PCI VGA card if card requests IRQ.
NO: Does not assign IRQ to PCI VGA card even if card requests an IRQ.
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

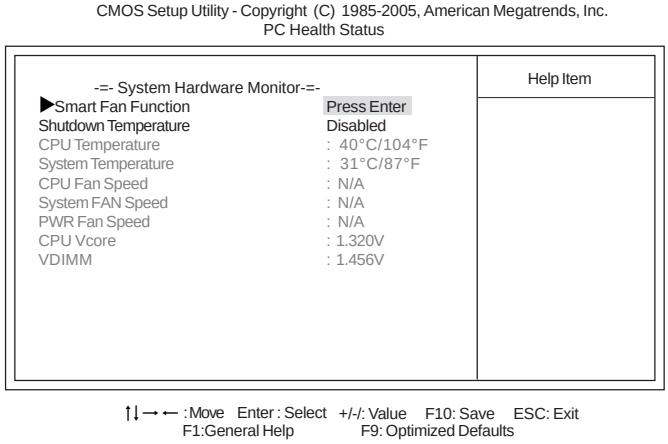
Allocate IRQ to PCI VGA (Yes)

If this item is enable, an IRQ will be assigned to the PCI VGA graphics system. You set this value to No to free up an IRQ.

Press <Esc> to return to the main menu setting page.

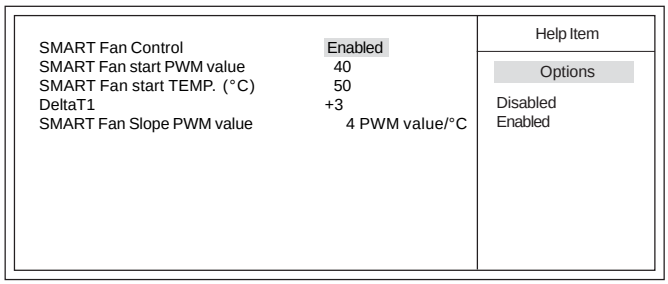
PC Health Status

On motherboards support hardware monitoring, this item lets you monitor the parameters for critical voltages, temperatures and fan speeds.



▶ Smart Fan Function

Scroll to this item and press <Enter> to view the following screen:



SMART Fan Control (Enabled)

This item allows you to enable or disable the control of the system fan speed by changing the fan voltage.

SMART Fan start PWM value (40)

This item is used to set the start PWM value of the smart fan.

SMART Fan start TEMP. (°C) (50)

This item is used to set the start temperature of the smart fan.

DeltaT1 (+3)

This item specifies the range that controls CPU temperature and keeps it from going so high or so low when smart fan works.

SMART Fan Slope PWM value (4 PWM value/°C)

This item is used to set the Slope Select PWM of the smart fan.

Press <Esc> to return to the PC Health Status page.

Shutdown Temperature (Disabled)

Enable you to set the maximum temperature the system can reach before powering down.

System Component Characteristics

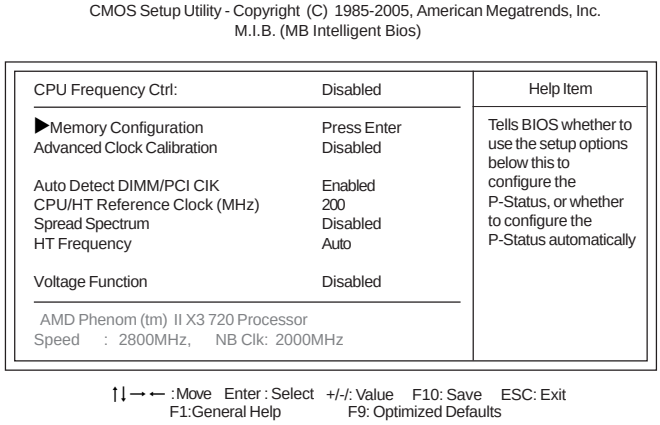
These items display the monitoring of the overall inboard hardware health events, such as System & CPU temperature, CPU & DIMM voltage, CPU & system fan speed,...etc.

- CPU Temperature
- System Temperature
- CPU Fan Speed
- System FAN Speed
- PWR Fan Speed
- CPU Vcore
- VDIMM

Press <Esc> to return to the main menu setting page.

M.I.B. (MB Intelligent Bios)

This page enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.

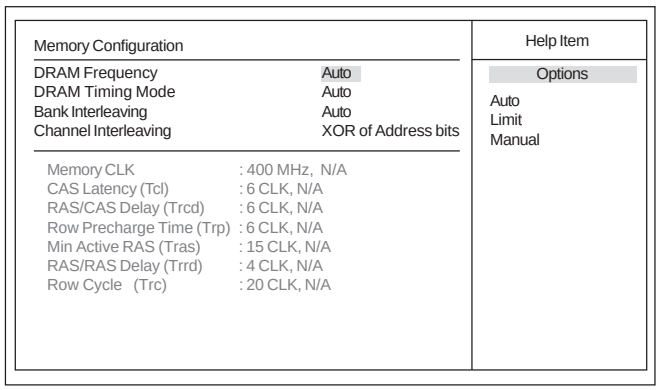

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
M.I.B. (MB Intelligent Bios)
CPU Frequency Ctrl: Disabled
▶Memory Configuration Press Enter
Advanced Clock Calibration Disabled
Auto Detect DIMM/PCI CIK Enabled
CPU/HT Reference Clock (MHz) 200
Spread Spectrum Disabled
HT Frequency Auto
Voltage Function Disabled
AMD Phenom (tm) II X3 720 Processor
Speed : 2800MHz, NB Clk: 2000MHz
Help Item
Tells BIOS whether to use the setup options below this to configure the P-Status, or whether to configure the P-Status automatically
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

CPU Frequency Ctrl (Disabled)

Use this item to enable or disable CPU frequency controller.

► Memory Configuration

Scroll to this item and press <Enter> to view the following screen:


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Memory Configuration
Memory Configuration
DRAM Frequency Auto
DRAM Timing Mode Auto
Bank Interleaving Auto
Channel Interleaving XOR of Address bits
Memory CLK : 400 MHz, N/A
CAS Latency (Tcl) : 6 CLK, N/A
RAS/CAS Delay (Trcd) : 6 CLK, N/A
Row Precharge Time (Trp) : 6 CLK, N/A
Min Active RAS (Tras) : 15 CLK, N/A
RAS/RAS Delay (Trrd) : 4 CLK, N/A
Row Cycle (Trc) : 20 CLK, N/A
Help Item
Options
Auto
Limit
Manual
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

DRAM Frequency (Auto)

This item enables users to adjust the DRAM frequency. The default setting is auto and we recommend users leave the setting unchanged. Modify it at will may cause the system to be unstable.

DRAM Timing Mode (Auto)

This item enables you to specify the DRAM timing mode to be configured automatically or manually.

Bank Interleaving (Auto)

This item is used to set the bank interleaving.

Channel Interleaving (XOR of Address bits)

This item is used to set the channel interleaving.

Memory CLK (400 MHz, N/A)

This item is used to set the memory clock mode.

CAS Latency (Tcl) (6 CLK, N/A)

This item controls the timing delay (inclockcycles) before the DRAM starts a read command after receiving it.

RAS/CAS Delay (Trcd) (6 CLK, N/A)

This is the amount of time a CAS is performed after a RAS. The lower the better, but some DRAM does not support low figures.

Row Precharge Time (Trp) (6 CLK, N/A)

This item specifies the Row precharge to Active or Auto-Refresh of the same bank.

Min Active RAS (Tras) (15 CLK, N/A)

This item determines the time RAS takes to read from and write to a memory cell.

RAS/RAS Delay (Trrd) (4 CLK, N/A)

This item specifies the active-to-active delay of different banks.

Row Cycle (Trc) (20 CLK, N/A)

Use this item to specify the Row Cycle Time.

Press <Esc> to return to the M.I.B. (MB Intelligent Bios) page.

Advanced Clock Calibration (Disabled)

This item can enable greater performance turning margin for the AMD Phenom™ Black Edition CPUs. The optimal gain can be seen in configurations that use high-end CPU cooling solution in combination with elevated CPU core voltage (CPU VID) value. The motherboards that support "advanced Clock Calibration"-feature should enable power delivery capabilities that exceed the 140W CPU TDP specifications in order to maximize the performance tuning potential.

Auto Detect DIMM/PCI Clk (Enabled)

When this item is enabled, BIOS will disable the clock signal of free DIMM/PCI slots.

CPU/HT Reference Clock (MHz) (200)

Use this item to set the CPU/HT Reference Clock through clock gen.

Spread Spectrum (Disabled)

If you enable spread spectrum, it can significantly reduce the EMI (Electro-Magnetic Interference) generated by the system.

HT Frequency (Auto)

This item enables users to manually set up the HyperTransport frequency, ranging from Auto, 1x, to 5x.

Voltage Function (Disabled)

Use this item to enable or disable the Voltage Function. If enable, users can increase the hardware voltage through BIOS settings.

Warning: Please pay attention that doing overvoltage may result in damage to hardware.

AMD Phenom (tm) II X3 720 Processor Speed (2800MHz)

This is display-only field and displays the information of the CPU installed in your computer.

NB Clk (2000MHz)

This item shows the frequency of Northbridge clock.

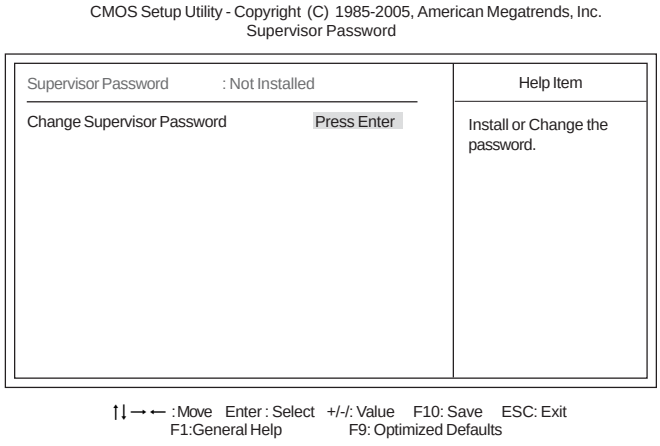
Press <Esc> to return to the main menu setting page.

Load Default Settings

This option opens a dialog box to ask if you are sure to install optimized defaults or not. You select [OK], and then press <Enter>, the Setup Utility loads all default values; or select [Cancel], and then press <Enter>, the Setup Utility does not load default values.

Supervisor Password

This page helps you install or change a password.


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Supervisor Password
Supervisor Password : Not Installed
Change Supervisor Password
Press Enter
Help Item
Install or Change the password.
↑↓→← : Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

Supervisor Password (Not Installed)

This item indicates whether a supervisor password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

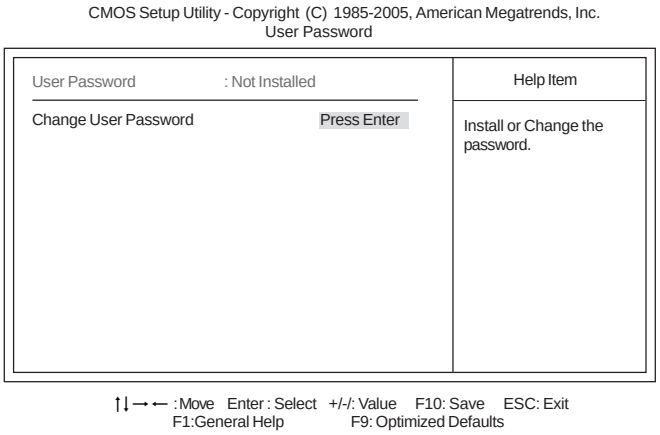
Change Supervisor Password (Press Enter)

You can select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor password.

Press <Esc> to return to the main menu setting page.

User Password

This page helps you install or change a password.


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
User Password
User Password : Not Installed
Change User Password Press Enter
Help Item
Install or Change the password.
↑↓→← : Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

User Password (Not Installed)

This item indicates whether a user password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

Change User Password (Press Enter)

You can select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor password. This item will show if Supervisor Password is set.

Press <Esc> to return to the main menu setting page.

Save & Exit Setup

Highlight this item and press <Enter> to save the changes that you have made in the Setup Utility and exit the Setup Utility. When the Save and Exit dialog box appears, select [OK] to save and exit, or select [Cancel] to return to the main menu.

Exit Without Saving

Highlight this item and press <Enter> to discard any changes that you have made in the Setup Utility and exit the Setup Utility. When the Exit Without Saving dialog box appears, select [OK] to discard changes and exit, or select [Cancel] to return to the main menu.

If you have made settings that you do not want to save, use the "Exit Without Saving" item and select [OK] to discard any changes you have made.

Updating the BIOS

You can download and install updated BIOS for this motherboard from the manufacturer's Web site. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

1. If your motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.
2. If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.)
3. Create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
4. Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the bootable device.
5. Turn off your computer and insert the bootable device in your computer. (You might need to run the Setup Utility and change the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the bootable device first.)
6. At the C:\ or A:\ prompt, type the Flash Utility program name and the file name of the new bios and then press <Enter>. Example: afudos 780D725.ROM /b /p /n /c /x
7. When the installation is complete, remove the bootable device from the computer and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten. The computer will restart automatically.

This concludes Chapter 3. Refer to the next chapter for information on the software supplied with the motherboard.

Memo

Chapter 4

Using the Motherboard Software

About the Software CD-ROM

The support software CD-ROM that is included in the motherboard package contains all the drivers and utility programs needed to properly run the bundled products. Below you can find a brief description of each software program, and the location for your motherboard version. More information on some programs is available in a README file, located in the same directory as the software. Before installing any software, always inspect the folder for files named README.TXT, INSTALL.TXT, or something similar. These files may contain important information that is not included in this manual.

1. *Never try to install all software from folder that is not specified for use with your motherboard.*
2. *The notice of Intel HD audio installation (optional): The Intel High Definition audio functionality unexpectedly quits working in Windows Server 2003 Service Pack 1 or Windows XP Professional x64 Edition. Users need to download and install the update packages from the Microsoft Download Center "before" installing HD audio driver bundled in the Driver CD. Please log on to http://support.microsoft.com/default.aspx?scid=kb;en-us;901105#appliesto for more information.*

Auto-installing under Windows XP/Vista

The Auto-install CD-ROM makes it easy for you to install the drivers and software for your motherboard.

If the Auto-install CD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Refer to the Utility Folder Installation Notes later in this chapter.

The support software CD-ROM disc loads automatically under Windows XP/Vista. When you insert the CD-ROM disc in the CD-ROM drive, the autorun feature will automatically bring up the install screen. The screen has three buttons on it, Setup, Browse CD and Exit.

If the opening screen does not appear; double-click the file "setup.exe" in the root directory.

Setup Tab

Setup	Click the **Setup** button to run the software installation program. Select from the menu which software you want to install.
Browse CD	The **Browse CD** button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support CD. Before installing the software from Windows Explorer, look for a file named README.TXT, INSTALL.TXT or something similar. This file may contain important information to help you install the software correctly. Some software is installed in separate folders for different operating systems. In installing the software, execute a file named SETUP.EXE or INSTALL.EXE by double-clicking the file and then following the instructions on the screen.
Exit	The **Exit** button closes the Auto Setup window.

Application Tab

Lists the software utilities that are available on the CD.

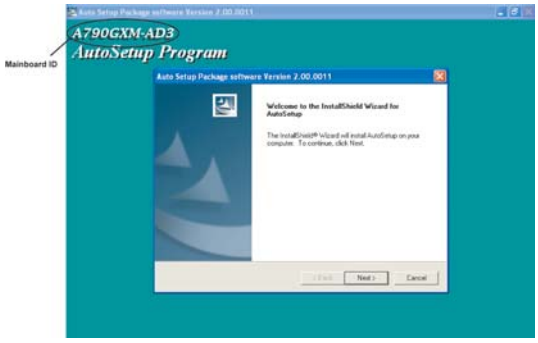
Read Me Tab

Displays the path for all software and drivers available on the CD.

Running Setup

Follow these instructions to install device drivers and software for the motherboard:

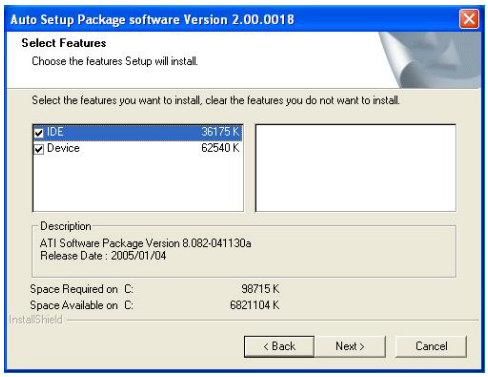
1. *Click **Setup**. The installation program begins:*



The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

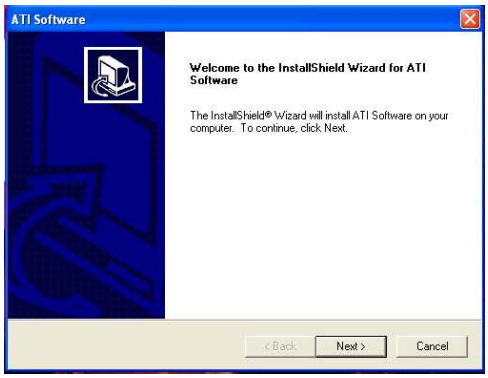
The motherboard identification is located in the upper left-hand corner.

2. *Click **Next.** The following screen appears:*


Auto Setup Package software Version 2.00.0018
Select Features
Choose the features Setup will install.
Select the features you want to install, clear the features you do not want to install.
IDE 36175 K
Device 62540 K
Description
ATI Software Package Version 8.082-041130a
Release Date : 2005/01/04
Space Required on C: 98715 K
Space Available on C: 6821104 K
InstallShield
< Back
Next >
Cancel

3. *Check the box next to the items you want to install. The default options are recom - mended.*

4. *Click **Next** run the Installation Wizard. An item installation screen appears:*


ATI Software
Welcome to the InstallShield Wizard for ATI Software
The InstallShield® Wizard will install ATI Software on your computer. To continue, click Next.
< Back
Next >
Cancel

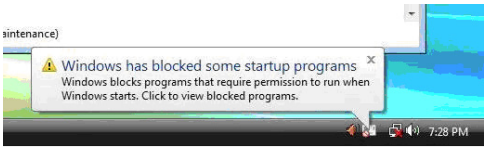
5. *Follow the instructions on the screen to install the items.*

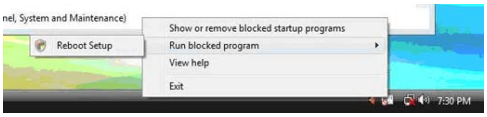
1. Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

2. During the Windows Vista Driver Auto Setup Procedure, users should use one of the following two methods to install the driver after the system restart.

Method 1. Run Reboot Setup

Windows Vista will block startup programs by default when installing drivers after the system restart. You must select taskbar icon **Run Blocked Program** and run **Reboot Setup** to install the next driver, until you finish all drivers installation.


Windows has blocked some startup programs
Windows blocks programs that require permission to run when Windows starts. Click to view blocked programs.
7:28 PM



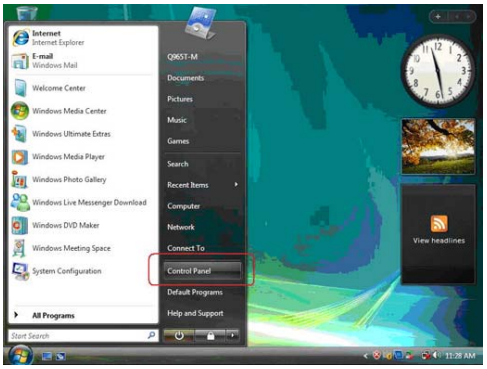
Method 2. Disable UAC (User Account Control)

* For administrator account only. Standard user account can only use Method 1.

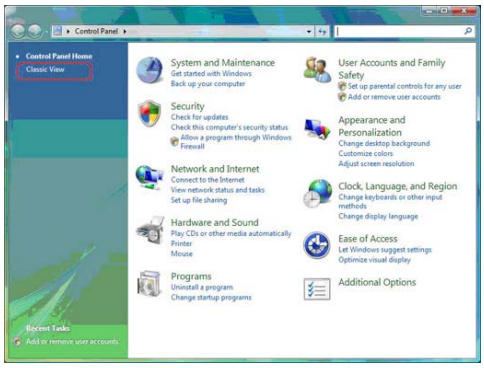
Disable Vista UAC function before installing drivers, then use CD driver to install drivers, it will continue to install drivers after system restart without running blocked programs.

Follow these instructions to Disable Vista UAC function:

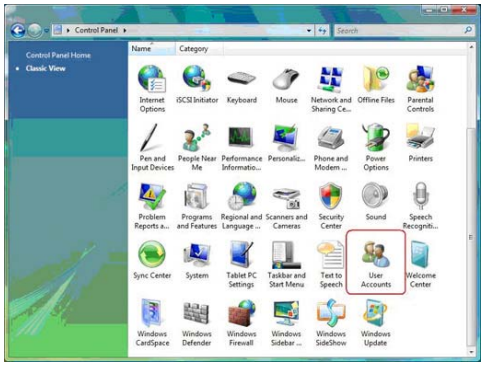
1. *Go to* ***Control Panel****.*



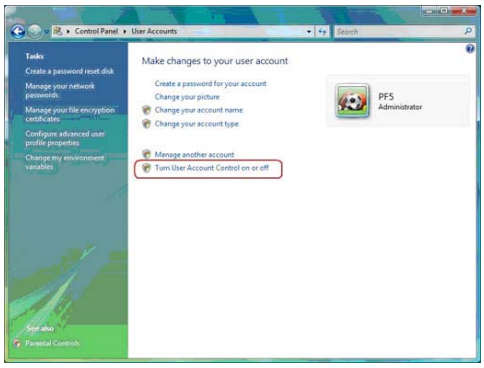
2. *Select **Classic View**.*



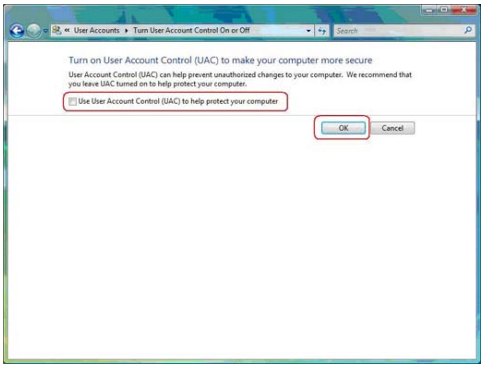
3. *Set **User Account**.*



4. *Select **Turn User Account Control on or off** and press **Continue**.*



5. *Disable* ***User Account Control (UAC) to help protect your computer*** *item and press* ***OK****, then press* ***Restart Now****. Then you can restart your computer and continue to install drivers without running blocked programs.*


User Accounts ▸ Turn User Account Control On or Off
Search
Turn on User Account Control (UAC) to make your computer more secure
User Account Control (UAC) can help prevent unauthorized changes to your computer. We recommend that you leave UAC turned on to help protect your computer.
Use User Account Control (UAC) to help protect your computer
OK
Cancel

Manual Installation

Insert the CD in the CD-ROM drive and locate the PATH.DOC file in the root directory. This file contains the information needed to locate the drivers for your motherboard.

Look for the chipset and motherboard model; then browse to the directory and path to begin installing the drivers. Most drivers have a setup program (SETUP.EXE) that automatically detects your operating system before installation. Other drivers have the setup program located in the operating system subfolder.

If the driver you want to install does not have a setup program, browse to the operating system subfolder and locate the readme text file (README.TXT or README.DOC) for information on installing the driver or software for your operating system.

Utility Software Reference

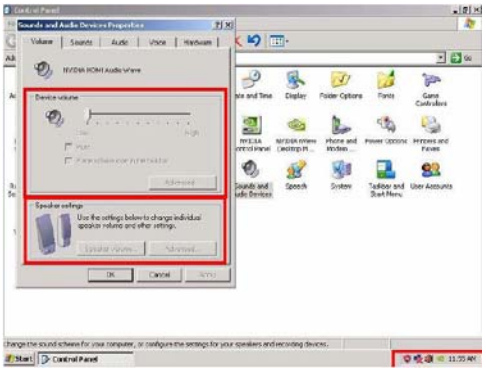
All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license.

1. *These software(s) are subject to change at anytime without prior notice. Please refer to the support CD for available software.*
2. *Please go to ECS website to download AMD Cool "n" Quiet™ technology.*

HDMI Audio setting SOP

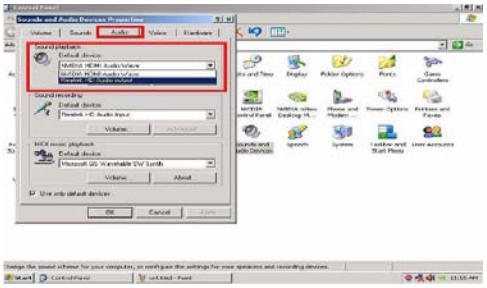
OS: XP system

1. Control Panel-->Sound and Audio Device Properties



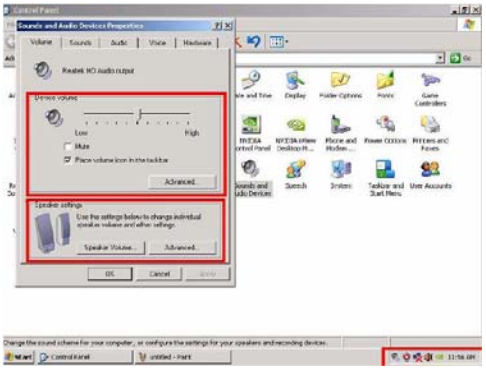
2. a. Audio--> Sound playback--> Default device--> HD Audio Output

b. Audio--> Sound playback--> Default device--> HDMI Audio Output



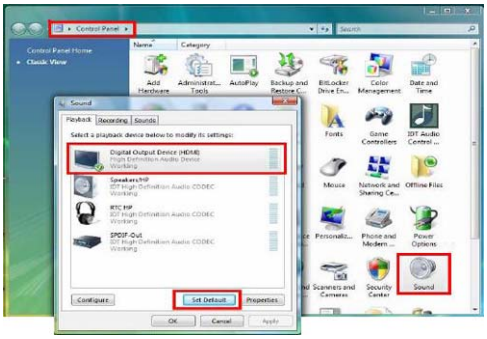
3. a. User Playback Audio speaker function working

b. User Playback HDMI speaker function working

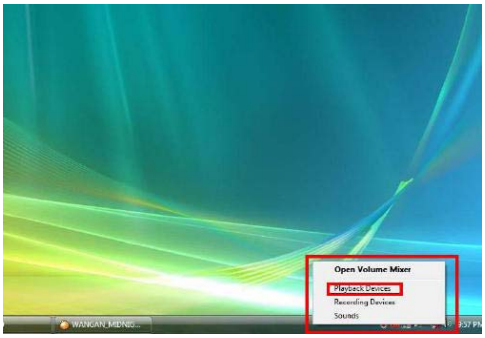


OS: Vista system

Control Panel--> Soundback--> Sound--> Digital Output Device (HDMI) --> Set Default

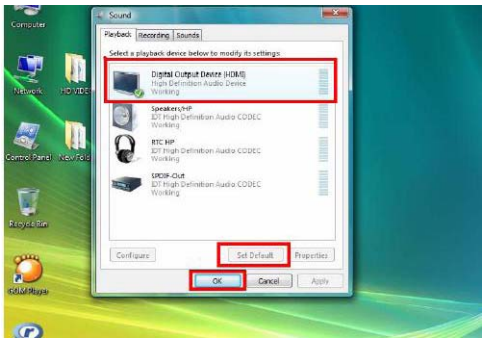


1. Volume --> Playback



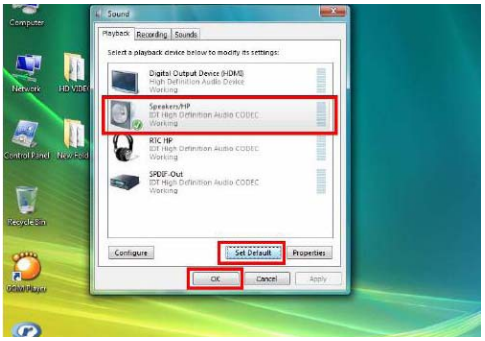
2. Digital Output Device (HDMI) --> Set Default --> OK

User HDMI Playback function working



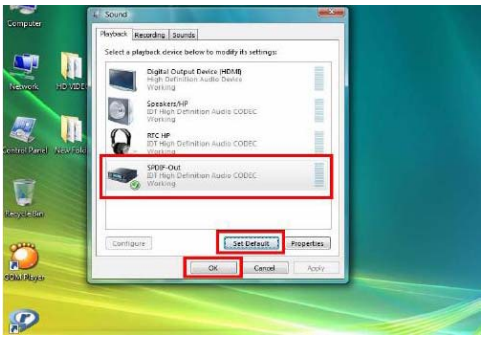
3. Speaker --> Set Default --> OK

User Speaker Palyback function working



4. SPDIF-Out --> Set Default --> OK

User SPDIF-Out Playback function working



This concludes chapter 4.

Memo

Chapter 5

ATI CrossFireX™ Technology & Hybrid Graphics® Technology Support

This motherboard supports ATI CrossFireX™ Technology that allows you to install multi-graphics processing units (GPU) graphics cards. Follow the installation procedures in this section.

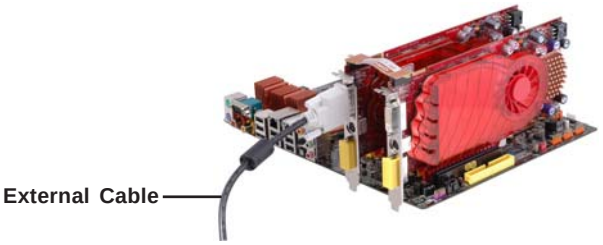
Requirements

1 You should have a CrossFireX™ Ready motherboard, a CrossFireX™ Edition graphics card and a CrossFireX™ ready graphics card.
2 Visit the ECS website (www.ecs.com.tw) for a list of qualified CrossFireX™ ready graphics card for this motherboard.
3 Make sure that your graphics card driver supports the ATI CrossFireX™ technology. Download the latest driver from the ATI website (www.ati.com).
4 Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system.

Installation and Use of CrossFireX™ Technology

1. Insert the CrossFireX™ graphics cards into the **PCIE16X_1** and **PCIE16X_2** slots. Make sure that the card is properly seated on the slot.

2. Connect an external cable to the CrossFireX™ ready graphics card installed on the **PCIE16X_2** slot.



3. Connect the two CrossFireX™ Edition graphics cards installed on **PCIE16X_1** and **PCIE16X_2** slots with the CrossFire Bridge.

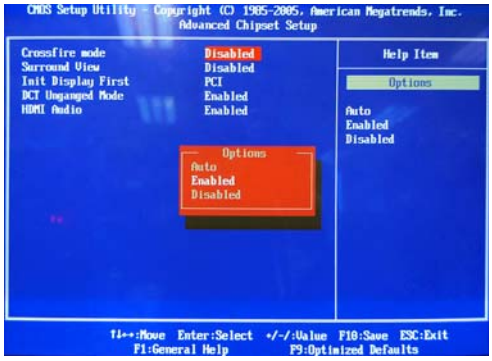
4. Connect the external cable to the corresponding port on your monitor.

5. Connect an auxiliary power source from the power supply to the graphics cards.

Table A: Supported PCI Express VGA Card List for CrossFireX™ Function

Vender	PCI-E Card	
ATI	MSI RX1300 TD256E (256MB)	Radeon X1300Pro
	ATI X1600XT (256MB)	Radeon X1600XT
	PowerColor X1900XTX (512MB)	Radeon X1900XTX
	ASUS EAX1950PRO/HTDP/256M/A (256MB)	Radeon X19500Pro
	MSI RX2600XT (256MB)	Radeon HD2600XT
	MSI RX3850-T2D256E-OC (256MB)	Radeon HD3850
	PowerColor AX3870 512MD-PH (512MB)	Radeon HD3870
	PowerColor AX4870 512MD5-H (512MB)	Radeon HD4870

6. Restart the computer, then press Delete to enter the BIOS setup; use the arrow keys to select Advanced Chipset Setup, then press Enter; set the item *Crossfire mode* to **Enabled** or **Auto.** Press F10 to save the configuration and exit the BIOS.



The item Crossfire mode will show only when you insert an external ATI graphics card.

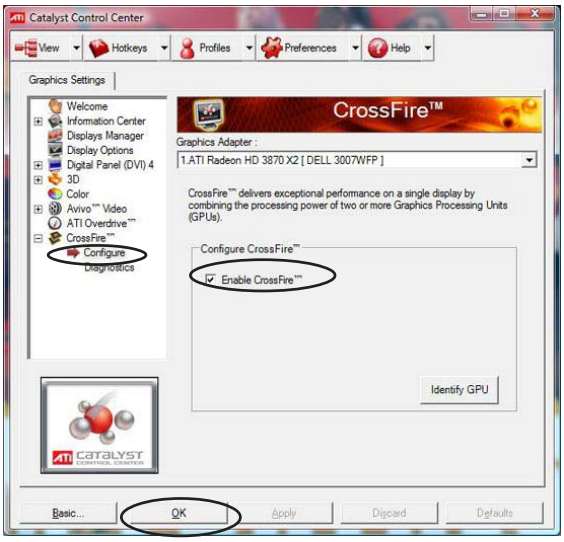
7. Enable the CrossFireX™ function in Catalyst Control Center.

View

The Catalyst™ Control Center provides two views; one is Standard view for beginners, the other is Advance view for advanced users to access and configure the complete features of the software.

To enable CrossFireX™:

- Set the view to **Advance**.
- Click the CrossFireX™ item in Graphics Settings.
- In the CrossFireX™ Setting dialog, tick the box opposite Enable CrossFireX™.
- Click **OK** to effect the setting.



Set to Advanced View to enable the CrossFireX™ function.

Hybrid Graphics® Technology

The Hybrid Graphics® technology provides significant display performance boost to AMD-based systems by inserting the external PCI Express graphics card and enabling both the discrete GPU and the 790GX graphics core to render simultaneously in Hybrid CrossFire® mode.

Follow the steps below to start the Hybrid Graphics® technology.

1. Insert a graphics card (which can be used for Hybrid Graphics® technology, such as HD3400 series) into the **PCIE16X_1** slot.
Make sure that the card is properly seated on the slot.

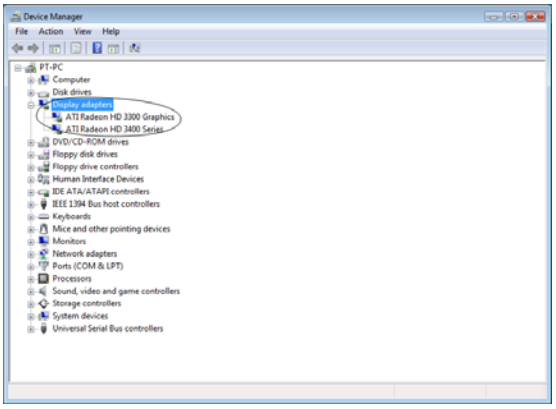
2. For Hybrid Graphics®, if display by PCI-E, you must enter the BIOS, set the *Surround View* in *Advanced Chipset Setup* to **PCI-E**. Then press F10 to save the configuration and exit the BIOS. After entering OS, enter *Catalyst Control Center* to enable CrossFire.

Note: SurroundView™ provides the power and convenience of multiadapter, multimonitor support for computers that use a PCI-E based graphics card in conjunction with ATI integrated graphic processors. And there are two options: Disabled and PCI-E.

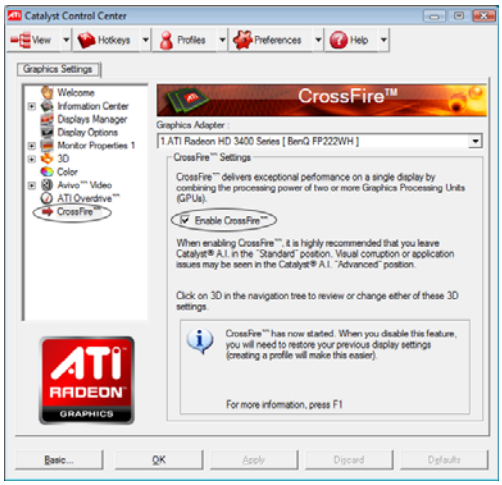
If *SurroundView™* set to **Disabled**, and *Init Display First* set to **OnBoard**, SurroundView™ will be Enabled by Catalyst Control Center based on cancel the *Enable CrossFire™* option.

While if display by OnBoard, you must enter the BIOS, set the *Init Display First* in *Advanced Chipset Setup* to **OnBoard**. Then press F10 to save the configuration and exit the BIOS. After entering OS, enter *Catalyst Control Center* to enable CrossFire.

3. Click with your right mouse button on *My Computer*, then click the option *Manage* and choose the *Device Manager*, finally, click the Display Adapters. The following screen appears. Be sure that the external ATI graphics (ATI Radeon HD 3300 Grapics) and Onboard graphics (ATI Radeon HD 3400 Series) are both displaying in the Display adapters.



4. Enter Catalyst Control Center, you can see the option of *CrossFire™*, click it and select *Enable CrossFire™*, then Hybrid Graphics® starts.


Catalyst Control Center
View
Hotkeys
Profiles
Preferences
Help
Graphics Settings
Welcome
Information Center
Displays Manager
Display Options
Monitor Properties 1
3D
Color
Avivo™ Video
ATI Overdrive™
CrossFire™
CrossFire™
Graphics Adapter :
1.ATI Radeon HD 3400 Series [BenQ FP222WH]
CrossFire™ Settings
CrossFire™ delivers exceptional performance on a single display by combining the processing power of two or more Graphics Processing Units (GPUs).
Enable CrossFire™
When enabling CrossFire™, it is highly recommended that you leave Catalyst® A.I. in the "Standard" position. Visual corruption or application issues may be seen in the Catalyst® A.I. "Advanced" position.
Click on 3D in the navigation tree to review or change either of these 3D settings.
CrossFire™ has now started. When you disable this feature, you will need to restore your previous display settings (creating a profile will make this easier).
For more information, press F1
ATI
RADEON
GRAPHICS
Basic...
OK
Apply
Discard
Defaults

Note:

You can only use either the CrossFireX™ technology or the Hybrid Graphics® technology since AMD does not support the case for Hybrid Graphics® technology by using CrossFireX™ technology and Onboard VGA.

Warning:

1. If you want to change UMA to UMA+SP or UMA+SP to UMA when using Hybrid Graphics®, please make sure to cancel *Enable CrossFire™* in *Catalyst Control Center* firstly, then restart the computer and enter the BIOS setup to make the change, finally, enter the OS and select *Enable CrossFire™* in *Catalyst Control Center*.

2. To disable Hybrid Graphics®, please make sure to cancel *Enable CrossFire™* in *Catalyst Control Center* firstly.

Chapter 6
Setting Up AMD SB750 RAID Configuration

Setting Up a bootable RAID Array

This section explains how to configure a bootable AMD RAID array.

Setting Up the BIOS

1 Start your computer, then press Delete to enter the BIOS setup.
The BIOS CMOS Setup Utility screen appears.

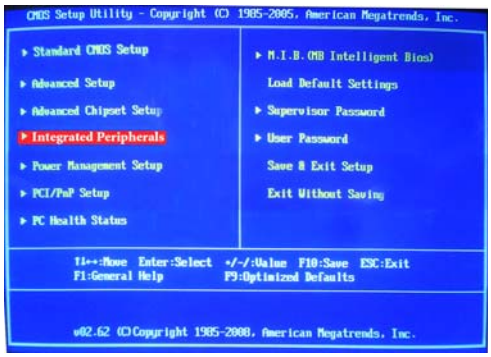


Figure 1.1 BIOS CMOS Setup Utility Main Screen

2 Use the arrow keys to select Integrated Peripherals (see Figure 1.1), then press Enter.

The Integrated Peripherals screen (or a screen similar to it) appears.

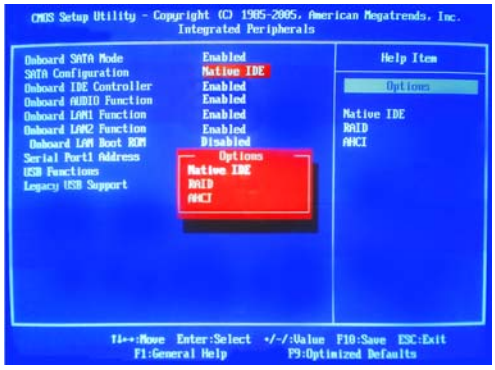


Figure 1.2 Integrated Peripherals Screen

3 Use the arrow keys to select the SATA Configuration (see Figure 1.2) and globally set SATA Configuration to RAID.

4 Press F10 to save the configuration and exit.
The PC reboots.

5 Enter the RAID BIOS Setup by pressing Ctrl-F when prompted, and proceed to set up the AMD RAID BIOS as described in the next section.

Configuring the AMD RAID BIOS

The AMD RAID BIOS set up lets you choose the RAID type and which hard drives you want to make part of the array.

Entering the RAID BIOS Setup:

1 Wait until you see the RAID software prompting you to press Ctrl-F.

The RAID prompt appears as part of the system POST and boot process prior to loading of the OS. You have a few seconds to press Ctrl-F before the screen disappears.

2 Press Ctrl-F.

The Main Menu screen appears (Figure 1.3).

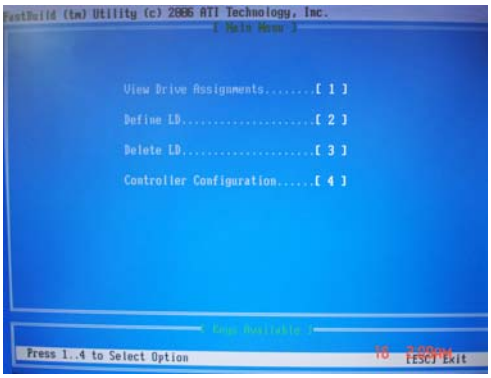

FastBuild (tm) Utility (c) 2006 ATI Technology, Inc.
[Main Menu]
View Drive Assignments.....[1]
Define LD.....[2]
Delete LD.....[3]
Controller Configuration.....[4]
Logs Available !
Press 1..4 to Select Option
[ESC] Exit

Figure 1.3 Main Menu

3 Select [2], then select LD 1 in the following page.

The Define LD Menu screen appears (Figure 1.4).

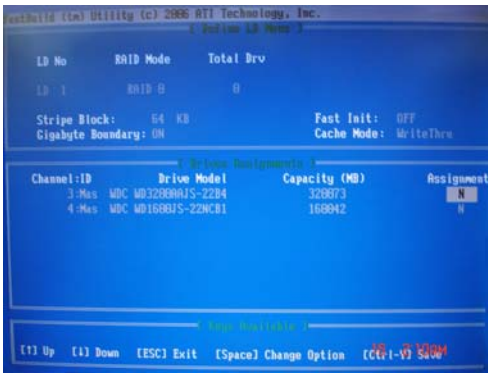


Figure 1.4 Define LD Menu

Using the Define a New Array Screen

If necessary, press the tab key to move from field to field until the appropriate field is highlighted.

- **Selecting the RAID Mode**

  By default, this is set to Mirroring. To change to a different RAID mode, press the spacebar until the mode that you want appears in the RAID Mode box—RAID0/1/10/JBOD.

  Note: Not all RAID levels are supported on all platforms.

- **Selecting the Stripe Block Size**

  Stripe block size is given in kilobytes, and affects how data is arranged on the disk. It is recommended to leave this value at the default Optimal, which is 64KB, but the values can be 64 KB and 128 KB. When choose RAID 1, the Stripe block size is unchangeable.

Assigning the Disks

1. Select the Assignment to Y to designate a free disk to be used as a RAID array disk.

   Figure 1.5 illustrates the Define a New Array screen after two disks have been assigned as RAID 0 array disks.

Figure 1.5 FastBuild Utility—Array Disks Assigned

2. Press Ctrl-Y to save the configuration and exit.

   The Define LD Menu screen appears (Figure 1.6).

Figure 1.6 Define LD Menu

3. Press ESC to exit.

   The Main Menu screen appears (Figure 1.7).

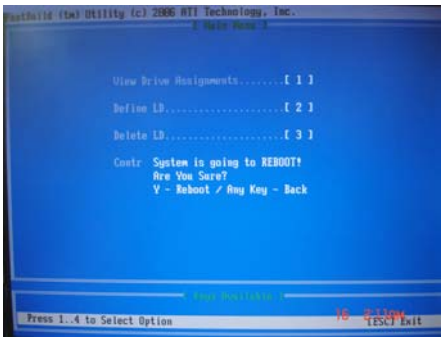

View Drive Assignments.....[1]
Define LD.....[2]
Delete LD.....[3]
System is going to REBOOT!
Are You Sure?
Y - Reboot / Any Key - Back
Press 1...4 to Select Option
[ESC] Exit

Figure 1.7 Main Menu

4 Press Y to reboot.

The following screen appears (Figure 1.8).

ID MODE SIZE TRACK-MAPPING STATUS
1 2+0 RAID 0 31000M 30661/255/63 Functional
2 ASUS DVD-E818AT
Press (Ctrl-F) to enter FastBuild (tm) Utility...

Figure 1.8

Installing the RAID Drivers

Your system may come with a Windows install CD that already includes AMD RAID drivers. If so, then this section is not relevant.

If that is not the case (or you are trying to install a new version of Windows), then you will need an AMD RAID driver F6 install floppy. Check to see if one came with your system. If not, you can create one by downloading the appropriate driver package and following the steps in this section.

1 Copy all files in "...\RAID\ATI\SB750\Floppy\Win3264" to a floppy disk.

2 After you complete the RAID BIOS setup, boot from the Windows CD.

The Windows Setup program starts.

Figure 1.9

3 Press F6 and wait a few moments for the Windows Setup screen to appear.

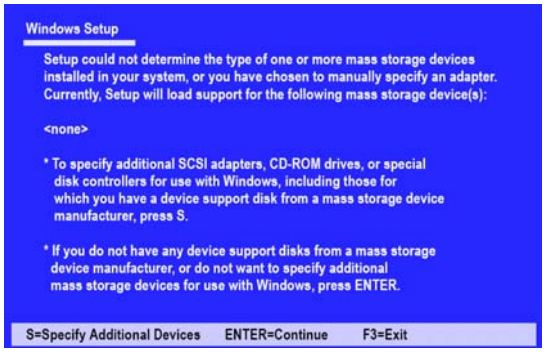

Windows Setup
Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage device(s):
<none>
* To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Windows, including those for which you have a device support disk from a mass storage device manufacturer, press S.
* If you do not have any device support disks from a mass storage device manufacturer, or do not want to specify additional mass storage devices for use with Windows, press ENTER.
S=Specify Additional Devices
ENTER=Continue
F3=Exit

Figure 1.10 Windows Setup—Specify Devices

4 Specify the AMD drivers.

a Insert the floppy that has the RAID driver, press S, then press Enter.

The following Windows Setup screen appears:

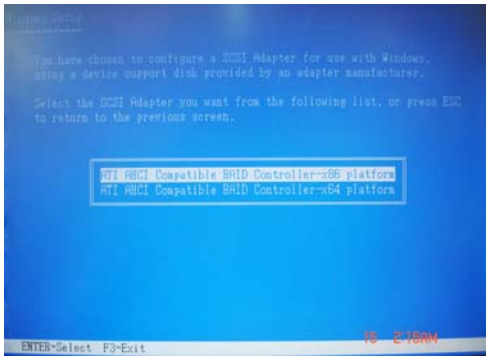

You have chosen to configure a SCSI Adapter for use with Windows,
using a device support disk provided by an adapter manufacturer.
Select the SCSI Adapter you want from the following list, or press ESC
to return to the previous screen.
ATI AHCI Compatible RAID Controller-x86 platform
ATI AHCI Compatible RAID Controller-x64 platform
ENTER=Select F3=Exit

Figure 1.11 Windows Setup—Selected SCSI Adapter

b Select “ATI AHCI Compatible RAID Controller-x86 platform” and press Enter for 32-bit OS or Select “ATI AHCI Compatible RAID Controller-x64 platform” and press Enter for 64-bit OS.

The following Windows Setup screen appears listing both drivers:.

Setup will load support for the following mass storage device(s):
ATI AHCI Compatible RAID Controller-x86 platform
* To specify additional SCSI adapters, CD-ROM drives, or special
disk controllers for use with Windows, including those for
which you have a device support disk from a mass storage device
manufacturer, press S.
* If you do not have any device support disks from a mass storage
device manufacturer, or do not want to specify additional
mass storage devices for use with Windows, press ENTER.
S=Specify Additional Device ENTER=Continue F3=Exit

Figure 1.12 Windows Setup—AMD drives listed

5 Press Enter to continue with Windows XP Installation.

Be sure to leave the floppy disk inserted in the floppy drive until the blue screen portion of Windows XP installation is completed, then take out the floppy.

6 Follow the instructions on how to install Windows XP.

After Windows XP is completely installed, it is recommended that you install the ForceWare software in order to access the FastBuild RAID Management tool.

Note: Each time you add a new hard drive to a RAID array, the RAID driver will have to be installed under Windows once for that hard drive. After that, the driver will not have to be installed.

Memo